MARCH, MDCCCLX.

THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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The Name, Paging, &c., of the 'Zoologist.'

From the Rev. Joseph Greene, M.A.

As a staunch supporter and admirer of the 'Zoologist,' I venture to reply to Mr. Newman's request that his subscribers would give him their opinion as to its name, paging, &c. I should greatly regret the adoption of a new name. *First*, I do not think a better can be substituted; *secondly*, it is one familiar to us (and a wise man will be slow to part with old friends); and *thirdly*, as I imagine, a different title could not but be displeasing to those who, like myself, possess the entire set uniformly bound and named. I would suggest the following changes only:—"Zoologist, New Series, Vol. i. page 1." With each new year I should recommence the paging.

I take this opportunity of making the following proposition to my brother entomologists, viz., that we should subscribe together to present some Testimonial to Mr. Newman, as an evidence of our appreciation of his services in the cause of Natural History. I learn from the 'Annual' that we number upwards of 1200. How many of these are subscribers to the 'Zoologist' I know not, but I should hope that there would be quite a sufficient proportion to carry out the scheme. Should my proposition be favourabl received, I would suggest that the amount of subscription from any one individual i no case exceed 5*s*. By establishing this as a maximum, and leaving it open to all t contribute a lesser sum, none will be excluded. I shall be most happy to act a Treasurer, and to receive contributions; if, however, any more suitable person be pro posed as willing to undertake the office, I shall readily give place to him, content t have originated the proposition. If the matter be taken up, as I sincerely hope it wil the different necessary arrangements can be subsequently made. I by no means wish to be understood that the Testimonial should be confined to entomologists: I woul invite ornithologists, phytologists, *et id genus omne*, to co-operate.—*Cubley Rector Doveridge, Derby.*

From P. H. Gosse, Esq., F.R.S.

On no account alter the paging of the 'Zoologist.' It is a most admirable devi for reference, that current pagination. It is no more "cumbrous" now than it was page 1000. At all events, keep it until it gets beyond four figures: go on to 99 before you commence a new series.—*Sandhurst, Torquay.*

From the Rev. Sir C. R. Lighton, Bart.

May I record my strongest vote against a change of name for the old 'Zoologis It has become such a "household word," after seventeen years of happy and use friendship, that I, for one, should greatly regret any change in that way. How wo Roman figures meet the difficulty? or, by commencing the numbering again, as befo and placing "new series" under the time-honoured name 'Zoologist,' and in the Ind for the future putting the letters "n. s." after the page?—*Ellastone.*

From A. G. More, Esq., F.L.S.

I trust that you will not think it necessary to adopt a new name for the 'Zoologi as it might be productive of some difficulties and confusion hereafter; and I confes do not see the advantage of changing the paging: until at all events you approach reach the 10,000th page, it seems to me that there is no more difficulty in managing set of four numerals than another; and the 'Zoologist' will be more complete in its if you continue the present plan.—*Vectis Lodge, Bembridge, Isle of Wight.*

[CONTINUED ON THIRD PA

Note on the partiality of the Coati-Mundi for Tobacco.—A gentleman, formerly resident in Demerara, informed me that a tame coati-mundi which he possessed whilst there would eagerly seize the end of a cigar when offered to him, and, unrolling the leaves, would diligently and vigorously rub his tail with them, beginning at the root of the tail and subjecting the whole of that organ to this singular process. In consequence of this information I tried the experiment on a coati-mundi which I have in confinement, and which, to my surprise, immediately went through precisely the same performance which my informant had observed in his Demerara individual, both with portions of cigar and also with tobacco in the form in which it is sold for use in the tobacco-pipe. From the account given to me of the tobacco-loving coati-mundi which my friend possessed in Demerara I am disposed to think that was an individual belonging to a different species from that in my possession, and if so the coincidence of habit in this curious particular between the two animals is perhaps the more singular on that account.—*J. H. Gurney; Catton Hall, Norwich; February* 3, 1860.

Notes on the Mountain Birds of Jamaica.

By W. Osburn, Esq.*

"Agualta Vale, Metcalfe, Jamaica,
January 4, 1860.

"My dear Sir,—It will, I think, serve in some degree to illustrate the remarks I have to make on the birds which frequent this north-eastern sea-bord, if I first note some of the many features which distinguish the district from those I have previously visited.

"In travelling eastward along the sea-side road through St. Mary's, just after passing the little group of negro-huts and wooden houses called Ora Cabessa, the road zigzags to the summit of a lofty promontory called the Crab Woods. It proves to be perfectly flat for a couple of miles, very dry, and, being exposed to the full fury of the sea breeze, barren all but a scanty crop of fan-thatch palms and the hardy stunted shrubs peculiar to such situations. These, shaped by the prevailing direction of the wind like a clipped hedge, keep off the breeze, but afford no shade. But on arriving at the eastward edge of this table-land, even a mid-day ride across is repaid by the magnificent view its elevation gives of the mountains of Metcalfe and St. George: they rise in detached and separate peaks, round which the sea breeze, however fine the day, scarcely fails to roll some fleecy clouds, and therefore differ equally from the successive ridges of the tertiary limestone and the 'crumpled-paper' appearance of the porphyritic

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* Communicated by P. H. Gosse, Esq., F.R.S.

BRITISH MUSEUM

conglomerate. From these, ridges and spurs plunge so abruptly into the Caribbean, in successive headlands and points, all down the coast, perhaps as far as Portland, that the mountains almost seem to rise from the sea. The little islet just below, crowned with its tuft of green bush, and which renders the deep bay of Port Maria so picturesque, is tertiary limestone, but the dark cliffs immediately behind the town belong to the transition rocks of Sir H. de la Beche, as from that point this, our oldest formation, commences. In the lower range of the parish of Metcalfe this is represented by a shale, in thin layers, often so contorted as to be schistose; in this the mountain torrents (called here rivers) have worn channels so deep that a great part of their winding courses seems ever in gloomy shade. The rains also have an extensive influence on it: when they are unusually heavy the torrents carry off their banks, and thus, half water, half land-slip, rush down to the rivers, tearing the mountain-sides with those tracks of ruin and force familiar to travellers among mountain scenery. Over such a country roads can only be carried with considerable difficulty, and the river beds usually serve as such. Under the action of these streams the shale seems to dissolve into mud and be entirely carried away; the river-beds are therefore composed of boulders and pebbles, chiefly of amorphous rocks washed out of the conglomerates above. This 'gravel,' as it is here called, which the Rio Minho must have made you familiar with, fills these narrow gorges to the limit of the flooding river, usually their whole extent, and composes its bed to the sea. Sir Henry de la Beche has introduced between these mountains of transition shale and the sea a band of tertiary limestone; but I have only been able in Metcalfe to find very occasionally masses of this rock, the rest consisting of marls,—in some instances chalky and white, but generally so mixed with sand and clays as to be scarcely recognisable.

"This forms a range of hills gently rounded as if by denudation, and it is on these much of the sugar cultivation is carried on. The narrow border between their base and the beach is occupied by an alluvial, the site of a chain of lagoons and swamps. This alluvial marks the line of junction of the limestone with the conglomerate, as, just below Dover estate, low reefs, close in-shore, of that formation may easily be examined. From this the surf washes out a 'gravel' not distinguishable from that brought down by the rivers: its great force and constant direction heap this into a ridge higher than the land behind it, and thus the rivers on approaching make a sudden angle, and after a course of some distance, almost parallel with the beach, enter the sea in a very oblique direction, or if the current be not very strong the surf places a dry bar completely across it. It is on a narrow strip, scarcely more than a bar, of this 'gravel,' that the little town of Annotto Bay is built, in front of a large lagoon and morass. The road from thence to Buff Bay runs for a considerable distance along it, where it is only just wide anough for the purpose. But another source of supply to these swamps, besides the interrupted surface drainage, is the great number of springs, of very considerable volume, which here find egress. In paddling down a canal cut through the morass at Dover I found them welling out between the roots of the flags that fringed the low bank at every few yards. This is doubtless the drainage from the marly hills, which rises to the surface at the point it meets with the impervious conglomerate. One remarkable feature of this beach of shingle or 'gravel' is that it renders the coast quite untenable to the mangrove. Along the whole coast line, from the mouth of the Wag Water to St. George's, no clump of this tree is to be met with; and this is the more remarkable as it has firmly established itself in a large lagoon called Alligator Pond, but does not seem able to extend beyond it. I thus have not fallen in with a single specimen of the pretty little warbler I alluded to in former letters as Sylvicola eoa. The place of the mangrove is supplied by a thin line of Coccoloba uvifera, much weather-beaten; and under its shelter flourish many maritime plants and shrubs—a Chrysobalanus with leaves and fruit much larger than the species common in Westmoreland, and Ecastophyllum Brownei, whose papilionaceous flowers, of a delicate white, would scarcely have been looked for in such a situation. Viewed from the coast the country has a cultivated look very unusual in Jamaica. The gently swelling hills from Blowing Point, and those all along the base of the higher mountains, seem occupied by extensive pastures, and patches of the same soft green appear, in the most inaccessible places amid dark woods, towards the summits of the mountain peaks. But the hills near Blowing Point are now only the site of numerous 'thrown-up' estates, the cultivated appearance being caused by the almost exclusive possession taken of the soil by a 'Guinea-grass.' The difference between this and the true Guinea-grass of the western parishes is well known to the pen-keepers of St. Ann's, who generally stub it up as a noxious weed, under the name of 'St. Mary's Guinea-grass.' Whether the distinction between the two has been botanically recognised I do not know, but in appearance it is considerable, principally with regard to size. It is here eight feet high or more, and so extremely coarse that horses will eat only the young leaves and shoots. It grows equally well along the edges of the morass or hill-sides, and once having obtained possession of the soil resists the encroachments of the 'bush.' The patches on the mountain-sides are doubtless the sites of deserted negro-grounds.

"I may mention, in connexion with this, that on my first arrival in the parish I missed that very familiar bird, Quiscalus crassirostris. I soon found, however, that, though it was wanting in the neighbourhood in which I happened to be, small flocks were to be met with here and there; but these will bear no comparison, as to number, with those of the western parishes. The Crotophagas appear, on the contrary, to be increased in numbers.

"As I observe, the diminished numbers of the former bird are usually to be met with about estates actively cultivated: it may possibly be that the tall Guinea-grass which occupies so large a portion of the lowlands does not suit them as foraging-ground, which they can only find in the small area still cultivated.

"Another of the remarkable features of the district is the prevalence of a palm called by the negroes 'Maccafat' (*Cocos fusiformis?*) Its tall stem, swelling upwards club-like, is armed with the most formidable thorns. It grows with an abundance I never saw elsewhere in Jamaica. It requires care to keep it out of the pastures. There are clumps of it along the river-courses; it abounds in hill-side thickets. In the same situations Inga vera is abundant, a tree new to me also, whose night-blowing flowers, though faded, are much frequented by humming-birds. I can scarcely omit notice of a splendid Aristolochia common in the hedges here, A. grandiflora? The singular helmet-shaped flowers, of a tawny-orange veined with purple, measure ten inches across, and are furnished with a long tape-like appendage, twenty inches in length, which sways about beneath. A single spray will bear numerous flowers in different stages.

"One of the points which have attracted my attention the most with regard to the birds of the district, I alluded to in my last letter, viz., the almost constant occurrence of flocks of Acanthylis along the coast, within the sound of the surf. With these I have also often noticed flocks of Hirundo euchrysea, similar to those I observed last year at this season about Mahogany Hill. On my arrival at this estate I was much pleased again to hear, for the first time this winter, the long-drawn notes of the solitaire (*Ptilogonys*); and yet we are here in the alluvial valley of the Wag Water, scarcely more than a mile and a half from the beach, and the trees on which the bird was singing can hardly be two hundred feet above the sea.

"Mr. Hill ('Birds of Jamaica,' p. 56) considers Acanthylis only an occasional visitor to the South-east. Your observations established the same fact for the South-western coast. I found them more common, during the winter, at Mahogany Hall (about 1000 feet); but in Metcalfe, at the same season, they are constantly to be seen close to the sea.

"Hirundo euchrysea is so brilliant a little bird that it is almost impossible it could escape an observer of Nature, even were its visits very rare. But Mr. Hill is quite silent as to its occurrence in his neighbourhood. It escaped your observation for two winters, mine for one, in the South-west, though I afterwards saw it close to the southern base of the central range at Oxford, in Manchester. At Mahogany, at this season, I found them appearing, at intervals, in large flocks; but here the same flocks hunt on fine mornings along the coast.

"Ptilogonys, I think there can scarcely be a doubt, occurs, during the winter, on the South side only, at the elevation you discovered it, 2600 feet. I met with them in Trelawny at a height I should estimate at least at 1000 feet less, and here they may be heard at a very slight elevation above the sea.

"And thus, were we to trace on the map lines representing the boundaries of the different winter migrations of all three species, they would singularly coincide: the great basins of the South side would be cut off the lines, keeping close to the central range, or including only lofty spurs; whilst on the North side they would descend much nearer the coast, keep at a less elevation, and as the mountains increased in height and the lowlands shrunk in extent they would finally coincide with the coast-line.

"Hence it appears that these mountain species, though they do not frequent the hot South-side plains and coasts, during the winter migrate downwards to a certain temperature. And should we be surprised at this? The influence of altitude on temperature, — an influence which intensifies as we approach the tropics, — is fully recognised in other departments of Science, and perhaps is less so in Ornithology, only because observation in the tropics, where it is likely to be most felt, are made with greater difficulty and to a less extent than elsewhere. But it should be borne in mind that the Hirundines, in migrating downwards as the winter approaches, probably gain an increase of temperature of fifteen or twenty degrees, or, what is perhaps the principal object, avoid the heavy rains, fogs and cold of the nights and mornings, and find within a short distance all the circumstances which combine to produce a plentiful supply of prey,—a change evidently quite as adapted to the bird's wants as that which the swifts that wheel round the church towers of England obtain after a distant migration. That the distance of a migration is very short, is not a reason why it may not be very effective, if these circumstances be taken into consideration. Many more instances in favour of this might be advanced, and I am inclined to think that the further our observations are extended the more will the existence of this double migration in the tropics be recognised—the one external, or a migration of latitude; the other internal, or a migration of altitude. In the latter the observer of Nature may see, passing as it were before his eyes, a representation of the former. Lines, however, representing the boundaries of the *summer* range of these three species, would by no means maintain the same coincidence.

"Ptilogonys certainly leaves the mountains of Trelawny during the summer, though their elevation is not less than 3000 feet, and, from information collected in your work, appears to be confined, for that season, to the still higher chains of this end.

"Hirundo euchrysea I found at Freeman's Hall in solitary pairs, and but few of them.

"The line indicated can only be comparatively called the *winter* boundary of Acanthylis, as the powers of flight of these birds are so great, and their habits lead them to take so wide a range, that probably during the whole summer, under certain conditions of weather, &c., they visit at intervals their winter haunts.

"I have given these observations in some detail, because they seem of more than mere theoretical importance. The case of a naturalist may easily be supposed whom circumstances led to the southern foot of the central range during the cold months. He might there see, once or twice, H. euchrysea, and procure specimens; he then might pass a whole year on the South coast, and even travel extensively on the North coast, without again falling in with them, and thus be led to conclude them to be stragglers from some external migration, when they really only travel up and down the mountains.

"A seventh species of Hirundine must be added to our Jamaica list. I saw it once, at Falmouth, on the coast, May, 1859, and early in the following October at Llandovery Estate, St. Ann's, close to the sea, and a third time here on the 15th of November last. It is immediately distinguished from H. pœciloma, which it most resembles, by its long forked tail and more rapid flight, but might easily be taken for the English bird, H. rustica, but it is, I think, ruddier beneath, and has on the outer vane of each tail-feather a conspicuous white oval spot. It may possibly prove to be the American barn swallow (*H. horreorum ; H. americana*, Wils.), as I learn from a very careful paper, published by Messrs. Newton, in the 'Ibis,' on the birds of St. Croix, that they visit that island during the autumn, but in the same transient way.*

"P.S.—The scenery has taken up a larger portion of my letter than I contemplated, but I was desirous of carrying into effect your valued recommendation of more description of this. I also thought it might aid to give a notion of the causes which combine greatly to influence the Ornithology of this district. I can scarcely hope I have succeeded; but I thought my only chance was, not to attempt to convey impressions merely, but to endeavour to pourtray a few of the more salient and peculiar features. The geology seemed the best means of doing this, but I have kept to points which I could examine for myself, and which appeared quite undeniable. In this I have been greatly assisted by De la Beche's map.

"*Errata.*—May I be permitted to make the following corrections of statements in my last letter on Chordeiles :—

"1. Since writing it an opportunity has been afforded me of re perusing White's 'Natural History of Selborne.' I cannot find the remarks I quoted; I have therefore erroneously given him as the author of observations I have seen elsewhere.

"2. I have said, 'But if the insect *intercept* the ray, then its vibrating gauzy wings enable us to see it at a considerable distance.' This is wrong, because, if it intercepted the light, it would appear black. What I should have said is, 'But, seen against the shadow of objects, whilst the insect itself reflects a strong light, its vibrating gauzy wings enable us to see it at a considerable distance.'

"3. A subsequent sentence should stand thus :—'May we suppose the eye of the swallow has the same power under whatever circumstances the ray is reflected?'

"I am greatly tasking your friendly interest in thus sending a letter of errata, but I feel assured you will understand my desire to have my statements as correct as possible.

"I have, during the past week, been exploring the lagoons and artificial canals of this low-lying district, but not with any great success, from the difficulty of procuring a canoe, and still greater of a boatman; for the negroes hereabouts are particularly independent and unmanageable. The pretty little rail, Ortygometra carolina, I find very abundant in such places. I have a specimen in which the buff colour of the vent-feathers is very conspicuous.

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* Or H. fulva, *Vieill.*, perhaps; but neither of these species has any white on the *inner* vanes of the tail-feathers.—*P. H. G.*

"W. Osburn.

"To P. H. Gosse, Esq."

Notes on the Habits of the Jabiru. By George Bennett, Esq.*

A short time since I purchased this rare bird, which was brought alive to Sydney from Port Macquarie, and so little being known respecting its habits I considered the following notes might be interesting. It appears to be a young male, and walks about the yard of the house quite domesticated, making no attempt to fly, nor showing any inclination to leave its domicile. These birds have a wide range over the colony, more particularly about the northern coasts of Australia, and are seen occasionally within the heads and about the sand-banks of the Clarence and Macleay Rivers. They are very difficult of approach, and consequently but few have been obtained, this being the first specimen ever brought alive to Sydney. Among the principal residents in the interior, some inform me that they have only seen four, others only one, during a residence of from twenty-five to thirty years in different parts of the colony. In Leichardt's expedition (according to the account of Mr. Murphy, now residing in Sydney) only two were seen, and these could not be approached sufficiently near to be shot. In 1839 a specimen was shot on Hunter's River, and another on the north shore, near Sydney, about three years since, both of which were presented to the Australian Museum. The person who shot the last bird had the greatest difficulty in procuring it, from its being so very shy and watchful: he was obliged to follow it for several days in its haunts about the salt-water creeks, until he could get sufficiently near to shoot it, which, being a good marksman, he achieved as soon as he could approach within range. Both these specimens were full-grown males, and in fine and brilliant adult plumage. These birds being so rarely seen, and difficult to procure when seen, are valuable as specimens when dead, and much more so when alive. Many of the residents of the northern districts had seen the bird, but rarely, and at a distance, and were aware how difficult it was to procure them; but none had ever seen it in captivity before, and it was therefore regarded with great interest. The number of skins of this bird I have seen during my residence of twenty-two years in the colony only amounts to four. The bird is very graceful: its attitudes and bearing, whether in a state of repose, stalking rapidly, or walking gently over a lawn or yard, with its measured noiseless steps, have a combination of grace and elegance, and it displays an independence of manner that might be expected in a bird so wild and roaming in its habits. It is gentle and good-tempered, soon gets reconciled to captivity, and seems to take pleasure in being noticed and admired, remaining very quiet to be looked at—keeping a bright eye upon the spectator, however, during the time. Although when first seen it has an uncouth appearance, from the large size of the mandibles in proportion to the body, yet on a closer acquaintance its manner wins upon you, and a feeling of attachment arises towards it from its placid, tame, domesticated manner, elegance of form, graceful carriage and beautiful metallic brilliancy of plumage, more especially over the head and neck.

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* From the 'Proceedings of the Zoological Society.'

This bird had been in captivity four months previous to its arrival in Sydney, having been captured by the blacks. It permits any one to approach it, only timidly moving away when an attempt is made to touch it. It sometimes stands quite erect, or on one leg, with the other thrown out; or rests upon the tarsi, like the emu and mooruk, and again upon one leg, with the bill inclined upon the breast. It was very hungry on its arrival at my house, and with the greatest facility devoured ½ lb. of beef, cut into small species, placed in a tub of water, or caught the meat in the mandibles when thrown to it. It also feeds on fish and reptiles. When the food is hard or gristly it is rejected from the mandibles after trying to masticate it, and bruised with the point of the beak until it becomes sufficiently soft to be swallowed. It feeds generally in the mornings and evenings; and although the mandibles look so large, it picks up the smallest object with great readiness, and clatters the mandibles with a loud noise when catching flies.

It preens its feathers, and removes any dirt or insects from them very neatly with the bill, accompanying the action with a degree of ease and grace pleasing to observe. When a tub of water was placed near it, it placed one leg in it, and after drinking filled its beak with water and threw it out again, as if washing out the mandibles. The eye is very large and remarkably brilliant, and yet imparts to the bird a great docility of expression, making it appear—what it is—an amiable bird, familiar with all around it, liking to court admiration, yet on the watch for any act of aggression. It appears pleased to see any stranger, and evinces but little fear. The horses coming into the yard, even close to it, or any noise, does not seem to annoy it; it only moves gently out of the way. When suddenly started it will flap its long and powerful wings, as if preparing for flight; and it may be regarded as a bird of flight, the whole bulk of the body being so light in comparison with its powerful wings. This bird is partial to salt-water creeks and lagoons. It is usually seen in such localities on the Hunter, Macleay and Clarence Rivers, which consist, near the entrance and for some miles distant, of salt water with numerous sand-banks, where these birds may be occasionally observed busily engaged in fishing. The beak of this bird is large, broad, conical and pointed; the lower mandible is slightly curved upwards; the colour is black. The head is large, and neck thick; both the head and neck are of a rich, deep, glossy green, changing, when it reaches the occiput, into beautiful iridescent colours of violet and purple, which, when viewed under a brilliant sunshine or in a changing light, display the iridescent tints in a most brilliant manner, shining with a metallic effulgence equal to that seen in the peacock. The greater wing-coverts, scapularies, lower part of the back and tail, dark brown mixed with rich bluish green, which changes in the adult to a rich glossy green, tinged with a golden lustre. The smaller wing-coverts, lower part of the neck and back and upper part of the breast white, speckled with ashy brown, which becomes white in the adult. Lower part of the breast, thighs and inner part of the wings white. Eyes brilliant, and dark hazel in colour. The legs are blackish, with a dark tinge of red, becoming in the adult a bright red colour, which, as I have been informed, when the bird flies with legs stretched out, looks like a long red tail. The legs are usually dirty with excremental matter, imparting to them a white appearance, so that the natural colour is seldom seen, except when they just emerge from the water. It is a large feeder, and these birds must consume, in their native haunts, a great quantity of fishes and reptiles.

It measures three feet ten inches to the top of the head, and is not yet full grown; they are said to attain four to five feet in height. It is shy of disposition and difficult of approach in its wild state: this can readily be supposed when it is observed in captivity; for although very docile and readily tamed, still the keen, watchful eye appears always upon you, with a brilliant and piercing look, which causes a feeling of the impossibility of escaping its penetrating glance. Its feeding-grounds and places of rest being about sand-pits, sand-banks and exposed morasses near the sea-coasts, it is impossible to approach this wary bird without being seen. The first evening it was at my house, seeking for a roosting-place, it walked into the hall, gazed at the gas-lamp, which had just been lighted, and then proceeded to walk up stairs, but, not liking the ascent, quietly walked down again, returned into the yard, and afterwards went to roost in the coach-house between the carriages, to which place it now retires regularly every evening soon after dark. It is always observed to face the sun, and moves about the yard following the course of that luminary: it may always be found in that part of the yard where the sun is shining, and with the face invariably towards it. When hungry it follows the cook about (who usually feeds it); and if she has neglected its food, looks into the kitchen, as if to remind her of the neglect, and waits quietly, but with a searching eye, during the time the meat is cutting up until it is fed. It is amusing to observe this bird catch flies: he remains very quiet, as if asleep, and on a fly passing him it is snapped up in his beak in an instant. The only time I observed any manifestation of anger in him was when the mooruks were introduced into the yard where he was parading about: these rapid, fussy, noisy birds running about his range excited his indignation, for on their coming near him he slightly elevated the brilliant feathers of the head, the eyes became very brilliant, he ruffled his feathers and clattered his mandibles, as if about to try their sword-like edge upon the intruding mooruks; but his anger subsided with these demonstrations, except an occasional flapping of his powerful wings. One day, however, on one of the mooruks approaching too near him, he seized it with his mandibles by the neck, on which the mooruk ran away, and did not appear in any way injured.

On the Great Auk (Alca impennis). By Edward Charlton, M.D.*

Not many generations ago, and long subsequent to the great era of the invention of printing, some gigantic birds inhabited the southern hemisphere, but have now become utterly extinct. The dodo has disappeared from its last habitat in the Isle of France, and not even a perfect skeleton has been secured of its remains; while a still larger bird, the Dinornis of New Zealand, has been in existence, perhaps, within the memory of persons yet living, or, at all events, individuals of the species survived until very recent times.

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* From the 'Transactions of the Tyneside Natural History Society.'

In the far North, in our own days, a similar fate threatens the bird we are about to speak of, though we rejoice to say it cannot be considered as entirely extinct. The destruction of the dodo was, doubtless, owing to the great facility with which that bird was captured, and to the excellence of its flesh for the table; and the latter cause, no doubt, influenced the inhabitants of New Zealand when they hunted down the Dinornis to its utter extirpation.

Not only is the great auk a timid, stupid and gregarious bird, especially in the breeding season, but its flesh was anxiously sought for by the earlier navigators, as superior to that of all others of its tribe. We do not, however, suppose that those rough mariners were very particular in their diet. Any fresh meat would taste exquisitely after weeks and months of privation on salted provisions; and even at the present day the inhabitants of Northern Europe, of Iceland, and of the Faroe Islands, maintain that the guillemot and the razorbill are culinary delicacies of a superior description.

Many of the modern writers on Ornithology have come to the conclusion that the great auk is now really an extinct species. We hope, however, to show that it is not, as yet, entirely extirpated, though, at the same time, we confess our inability to point out its precise habitat. At long intervals, sometimes of ten or fifteen years, a few individuals of this species have made their appearance, during the present century, in the Icelandic seas and other parts of the Arctic Ocean; but no breeding-places to which these birds annually resort is now known to naturalists. With the exception of the late Mr. Bullock, of London, no ornithologist of the present century has observed the great auk in its wild state. Mr. Bullock, as is well known, chased one of these birds in a six-oared boat off the Island of Papa Westra, in the Orkneys, in 1812, where they had bred for many years. The female bird was soon after shot, and sent up to London. But even the older naturalists rarely saw this bird alive. Wormius (or Ole Worm), the Danish naturalist, who wrote in 1655, is almost the only one who speaks of its habits from actual observation. "I received," says he, "three skins of this rare bird from Ferro, and also a living individual from the same locality. The live bird I kept for several months in Copenhagen. It was probably a young one of the species, as in size it did not much exceed the bigness of a goose. It could swallow at once a whole herring, and occasionally could take three in succession ere it was satiated." Wormius's figure in his Museum

Wormianum is, on the whole, pretty accurate, with the exception of the ring round the neck; and it is probably the only drawing that has been taken from the living bird. His specimen, when drawn, was evidently in summer plumage, for in winter the black colour of the throat and fore-neck is replaced by white. According to Benicke, a writer in Oken's 'Isis' for 1824 (p. 88), the eye-spot becomes, in winter, of a dark brown, interspersed with a few white feathers. The specimen in the Museum of Natural History is undoubtedly an immature bird: it belongs to the old Wycliff Museum; but no record has been preserved of where it was obtained. Friedrich Faber, in his excellent 'Monograph of the Birds of Iceland,' published in 1822, at Copenhagen, states that, during his three years' residence in Iceland, he was never able to meet with a single specimen.

Faber's work has unfortunately never been published in the English language, though the late Professor Jameson, of Edinburgh, long ago told us that he had translated it, and we ourselves prepared another version of it more than twenty years ago, which has remained in MS. ever since. "According to native accounts, the Geirfugi, or great auk, formerly bred upon two isolated rocks to the south of Iceland. One of these lies about fourteen miles to the south of the Westmann Isles; and the other, on which the bird was said to have been much more plentiful, is the first of three rocks off the projecting point of Rekjanes, on the south-west of Iceland, and about twenty English miles from the land."

Eggert Olafsen, in his 'Travels in Iceland' (p. 983), accurately describes the great auk, and indicates its two breeding-places, adding that when he was upon Vidoe two boats went off to the Reykianes Rock, and brought him both the birds and the eggs. This was in the year 1770, or thereabouts. "For a long time," continues Faber, "the Icelanders have relinquished the dangerous voyage to the Geirfugi Skjaer, as it could only be attempted, with any chance of success, in the calmest weather, and even then a man had to spring from the boat on to the rock, with a rope round his body, by which, after searching the islet, he was dragged off again through the ever-boiling waves."

In the summer of 1821 Faber hired a fishing yacht at Reykiavik, and, along with a Danish merchant and a Swedish Count, reached the rocks off Reykianes on the 25th of June. For two days they cruised off these dangerous skerrys, and once accomplished a landing, though the Count narrowly escaped with his life, having fallen between the boat and the rocks when attempting to leap on shore. There was not, however, a single bird of this species to be seen; and the same ill success attended his visit, the same year, to the other habitat of the great auk, near the Westmann Islands. The fishermen, however, in many parts of Iceland, maintained that they saw the bird every year upon the coasts. They seemed to know it well, for they were perfectly aware of its inability to fly, and believed it to be blind, from a flap of skin that hung down over its eyes, an idea undoubtedly derived from the remarkable eye-spot so conspicuous on the summer plumage.

In the summer of 1813 a vessel from Faroe was becalmed off the Geirfugi Skjaer, at Reykianes. The crew, observing the rocks close by to be free from surf, put out their boat, and, landing on the islet, found on it a number of great auks. Of these birds they knocked down with their sticks and secured between twenty and twenty-five individuals, and drove the rest into the sea. One of the birds was taken alive, and brought to Bishop Vidalin, at Reykiavik, who had the specimen stuffed, and sent it to a friend in England. The others, I regret to say, were sold on the spot, and eaten. In the succeeding year (1814) seven of these birds were killed by a peasant at Lautrum bird-cliffs, on the north-west coast of Ireland. They had scrambled on to the low ledges at the foot of the bird-cliff, and were there overtaken by their captors. One of them, before it was taken, bit a boy so severely through the sleeve of his calf-skin jacket that the blood ran down his arm.

The farmer on the Westmann Islands informed Faber that about the year 1800 he caught the only bird of this species he had ever seen, at the bottom of the cliffs on those islands. It was sitting on its egg, which he correctly described to Faber as being nearly equal in size to that of the wild swan, and in form and colour exactly resembling that of the razorbill.

In 1823 two great auks were killed on a low rock near the trading station of Œiebakke, on the southern coast of Iceland.

In 1830 and 1831 not less than twenty-seven specimens were obtained on the Reykianes habitat; and from that time till 1840 about half-a-score were obtained in the same locality.

The last birds taken in Iceland were a pair, male and female, which were shot in 1844, at their nest, on a little islet near to Reykianes.

Of the great auk's appearance in our own British seas during the present century, there have been but very few instances indeed. Besides the specimens obtained in Orkney by Mr. Bullock, one was captured in 1822, in St. Kilda; and the most recent instance on record is that of a specimen now in the Dublin University Museum, which was taken in May, 1834, on the coast of Waterford. The bird was first seen close to the yaul of a fisherman, and apparently in a starved condition; for on his holding out some sprats to it, it came close to the boat for them. This may, however, have been only that the bird was so little acquainted with man, and quite corresponds with the ancient accounts of its stupid character. Another bird of the species, probably the male of this, was shortly afterwards procured in the same locality, but was not preserved.

In Northern and North-eastern Europe the great auk is equally rare. According to Benicke, a specimen of the great auk was shot in 1794, in the harbour of Kiel, in Holstein; and in 1838 another bird of the species was killed in the neighbourhood of Freidrikstadt. It seems almost certain, too, that in 1848 a great auk was shot on the Island of Wardoe, within the Arctic circle, by one of the peasants there. It is possible that this bird formerly even bred in Denmark, for portions of its skeleton have been found and recognised in the so-called "Kjokken Moddinger," the remnants of the repasts of the aborigines of that country. The bird seems, therefore, in former times, to have been widely distributed on the Atlantic coasts; but its principal habitat was undoubtedly on the eastern coasts of Newfoundland and Labrador. Possibly, in earlier times, it was much more numerous on the eastern shores of the great Atlantic Ocean; but, on the other hand, the few scattered individuals that have appeared on our shores, and in the Faroe and Orkney Isles, may have been originally driven by stress of weather from the American coast, and have settled down on the rocks that they had taken refuge on. On the Newfoundland fishing-banks the great auk was two centuries ago to be found in great abundance. Its appearance was always hailed by the mariner approaching that desolate coast as the first indication of his having reached soundings on the fishing-banks. During the sixteenth and seventeenth centuries these waters, as well as the Iceland and Faroe coasts, were annually visited by hundreds of ships from England, France, Spain, Holland and Portugal; and these ships actually were accustomed to provision themselves with the bodies and eggs of these birds, which they found breeding in myriads on the low islands off the coasts of Newfoundland. Besides the fresh birds consumed by the ships' crews, many tons were salted down for further use. In the space of an hour, these old voyagers tell us, they could fill thirty boats with the birds. It was only necessary to go on shore, armed with sticks, to kill as many as they chose. The birds were so stupid that they allowed themselves to be taken up, on their own proper element, by boats under sail; and it is even said that on putting out a plank it was possible to drive the great auks up out of the sea into the boats. On land the sailors formed low enclosures of stones, into which they drove the penguins, and, as they were unable to fly, kept them there enclosed till they were wanted for the table.

In 1841 a distinguished Norwegian naturalist (too early, alas! lost to Science), Peter Stuwitz, visited Tunk Island, or Penguin Island, lying to the east of Newfoundland. Here, on the north-west shore of the island, he found enormous heaps of the bones and skeletons of the great auk, lying either in exposed masses or slightly covered by the earth. On this side of the island the rocks slope gradually down to the shore; and here were still standing the stone fences and enclosures into which the birds were driven for slaughter. It is said, too, that as the birds were fat, and burnt well, they were actually used for fuel, as the dried bodies of the auks and guillemots are still employed on the Westmann Islands.

Holböll tells us that no specimen of the great auk has been seen in Greenland since 1815; but Dr. Pingel informed us, in Copenhagen, in 1836, that two birds of the species had been killed there since 1830. One was eaten by the Moravian missionaries as a wild goose! and the other was preserved, and is now in the collection of an ornithologist at Schleswig.

It has been surmised that the present habitat of the great auk may be upon the inaccessible coast of East Greenland; but ships sailing between Iceland and that country never meet with the great auk upon their passage; nor was the bird observed by Scoresby or the few other navigators who approached these ice-bound shores. Nor did Graah observe this bird during his toilsome researches east of Cape Farewell.

It is possible that a few of these birds still survive on the islets of Newfoundland or Labrador; but, if not already extirpated, the great auk will, ere many years have elapsed, be numbered amongst the things that were.

Whitetailed Eagle* (Falco albicilla) *near Eastbourne. — A most magnificent specimen of this eagle was shot on Saturday last, at Birling Gap, by Mr. John Hicks, chief boatman of that station. It was feeding on a dead turtle that had been washed ashore by the late heavy gales. It weighs nearly 8 lbs., measures from tip of bill to end of tail 3 feet, and about 7 feet from tip to tip of the wings. It had been seen about the neighbourhood several days. The bird is now in my possession.—*John Dutton; South Street, Eastbourne, December* 23, 1859.

Peregrine Falcon (Falco peregrinus) *near Eastbourne.*—A fine female peregrine falcon was shot near here this week, which I saw in the flesh. A fine buzzard was also shot at Compton Place, Eastbourne, the seat of the Hon. Mr. Cavendish.—*Id.*

Occurrence of the Osprey (Falco haliæëtus) *in Derbyshire.*—About two months since a very fine specimen of the osprey was shot by my relative Sir J. Harpur Crewe, Bart., on part of the Trent which runs through his property in Derbyshire, and is now in his collection at Calke Abbey. The bird had, I hear, for some little time frequented the river near the spot where it was killed.—*H. Harpur Crewe; Wickham Market, Suffolk, January* 31, 1860.

What is Falco Forskalii?—Some little time since I had an egg, very similar in appearance to a kite's or common buzzard's, sent to me from Germany, distinctly marked "Falco Forskalii." I shall feel greatly obliged if any of your numerous readers will inform me what region F. Forskalii is supposed to inhabit, as I cannot find it named in any work to which I have access.—*W. Webster; Upton Hall, Birkenhead, February* 8, 1860.

[Falco Forskalii, or the black kite, is a native of Europe, Asia and Africa. There are specimens in the British Museum from Sweden, Nepal, Egypt and the Cape. In private collections I have seen specimens of this bird from France, Germany, Portugal and Morocco. It is also called Falco ater, F. ætolius, F. austriacus, F. fusco-ater, F. regalis, F. cinereo-ferrugineus, F. ægyptius, F. migrans and F. parasiticus. One of these names, F. regalis, was applied in error by Pallas, who believed it a variety of the common kite. The numerous other names indicate slight differences, as of age, sex or country.—*E. Newman.*]

Occurrence of the Roughlegged Buzzard (Falco lagopus) *at King's Lynn.*—I have had a fine female specimen of this bird sent to me for preservation. It was shot at Gaywood, near Lynn, in October, 1859. I was informed that when taken it was about seizing a chicken. I have also received a male specimen of the cinereous shrike (*Lanius excubitor*), shot in November, at Churchwarton, near Lynn.—*W. Wilson; Museum, King's Lynn, January* 26, 1860.

Occurrence of the Alpine Accentor (Accentor alpinus) *near Cheltenham, and the Glossy Ibis* (Ibis falcinellus) *in Somersetshire.*—A fine specimen of the alpine accentor was shot some time ago near Cheltenham; and that beautiful bird the glossy ibis was taken at Shapwick, in the county of Somerset, some months ago, and is in the possession of Mr. White, an intelligent bird-stuffer, living in the upper part of the Bath Road.—*H. W. Newman; Hillside, Cheltenham, February* 1, 1860.

Greenfinch and Linnet Mule.—On Monday, November 14, 1859, a curious hybrid was taken near Brighton, in the common clap-nets used by bird-catchers. It was a cross between the greenfinch (*Fringilla chloris*) and the brown linnet (*F. cannabina*). This remarkable specimen had the large beak, legs, claws, and thick skull of a greenfinch, with the colours on the breast, back and elsewhere of the brown linnet, except that the tail-feathers and primaries were marked with yellow where there is white in the linnet, forming together, to an ornithological eye, a most strange combination. The feathers of this hybrid were clean and perfect, showing no marks of confinement; nor indeed would these birds produce a cross in captivity. When we consider how strictly Nature has guarded her boundaries, and how rarely we find any intermixture of species in a state of freedom, the muel bird under consideration is the more interesting. It has been carefully preserved by Mr. Swaysland, of 4, Queen's Road, and is now in the possession of Mr. Bond, of 24, Cavendish Road, St. John's Wood, who will be happy to show it to any gentleman who will call.—*Edward Newman.*

Note on a Variety of the Chaffinch (Fringilla cœlebs), *and on a Coot* (Fulica atra) *found in an odd Situation.*—The variety from which I subjoin the following description was procured near the town of Kettering, Northamptonshire, on the 3rd of December, 1859. This same bird had been observed for some months previous to its capture by various persons, as also by the Rev. F. Tearle; but all attempts, which were not a few, to shoot it were futile until the time named above. It is the only instance of a pied chaffinch having come under my notice. The pied markings of this bird are as follows:—Bill much paler blue than in an ordinary specimen, slightly tipped with black. Head and neck white, with the exception of a brownish feather or two; a band of darkish feathers passes round the back part of the head, in the shape of a half-circle, from behind each ear; ear-coverts buffish orange. Back pied white and brown. Rump green. Tail black, with the two outer feathers on each side edged with white. Breast, belly and vent pinkish buff. Eyes hazel. Legs and toes light brown. The bird is an adult male. About three weeks since the gardener of Downing College brought me a coot, which he said he had found down his kitchen area, closely snugged up in one corner. The weather at the time was mild; nor had there been any heavy gales blowing. The bird appeared to be in a perfectly healthy state, and showed no marks of recent confinement. What could have induced it to choose such a strange situation?—*J. P. Saville; Jesus Terrace, Cambridge, February* 7, 1860.

Occurrence of the Coral Waxbill (Estrella astrild) *in the Isle of Wight.*—On the 8th of November last no less than three of these little exotic finches were observed in the neighbourhood of Freshwater Bay. One moment they were on the ground feeding, the next hidden in some bush. It was this movement that caused me to notice them. After some trouble I succeeded in shooting one. Its crop was distended with the pupæ of a dipterous insect. These birds are said to feed upon millet in their native country; but here they would be more likely to suffer from cold than from the want of that food. The specimen alluded to is in the possession of Mr. F. Bond, who informs me that the species inhabits Africa and the Mauritius, and is frequently seen in the shops of the London fanciers, who call it the "coral waxbill," and who do not consider it very hardy. Possibly those I saw had escaped from confinement, or from a ship passing the island or wrecked on its coast: there is no probability of their having voluntarily made so long a pilgrimage from their native country.—*Henry Rogers; Freshwater, Isle of Wight, February* 3, 1860.

Nest of the Green Woodpecker (Picus viridis).—In the 'Zoologist' for 1858 (Zool. 6327), I gave an account of an examination of the nest of the green woodpecker, and of the actions of the bird after the entrance of the nest had been stopped up with a turf. In the spring of the year 1859 it was observed that this obstruction was removed, probably through the influence of the rain in winter, and consequently that the orifice was now of much larger size than is usual in the nest of this bird. But in April it was further noticed that the cavity in the tree was occupied with materials of some other kind than is usual with the woodpecker, and that, among other things, wool was to be seen. This was soon explained by the discovery that the convenient cavity had been seized by a jackdaw, several of which are in the habit of associating with the rooks of the rookery close by. The unfortunate woodpecker had been anticipated by the black intruder, and thus was expelled from its hereditary tree, to seek a refuge in some new and untried region; but it was long before I was able to discover to what new district it had taken itself. I have little difficulty in believing that this was at the distance of about a mile; but it seems remarkable that it should select a spot where secrecy and solitude are out of the question. For the first time, in 1859 a woodpecker's nest was discovered in the body of a pollard-ash tree, at a small distance from a frequented farm-house, in the close neighbourhood of a wood, but still at such a distance from other trees as to allow the watchful bird to discover any one from whom danger could be feared to its personal liberty.—*Jonathan Couch; Polperro, Cornwall, February*, 1860.

Attachment of the Creeper (Certhia familiaris) *to its Nest and Eggs.*—During the spring of 1859 I met with a most remarkable instance of the attachment of the creeper to its nest and eggs. Early in May a pair of these birds built their nest in a wooden shed which covered a saw-pit; the nest was placed between the wall and a loose board which was leaning against it, and was an extremely neat structure, formed of little chips of wood, straw, roots, &c., and thickly lined with feathers. Not long after the eggs were laid the saw-pit was occupied by workmen, who were soon busy at their noisy employment within a few feet of the nest; but the hen still sat on. Nor was this her only trial: twice I found the board removed by mischievous boys, the nest being thus laid bare; but on my carefully replacing it the poor little mother returned to her eggs. She hatched her young, but they were destroyed by a cat.—*E. R. Alston; Stockbriggs, Lesmahagow, Lanarkshire.*

Mode of Feeding of the Marsh Titmouse (Parus palustris).—The following curious habit of the marsh titmouse is not noticed by Mr. Yarrell. When this bird is searching for insects in the rough bark of the Scotch fir, it may sometimes be observed to insert its beak under a scale of bark, and prize it off with a jerk, which sends the piece to some distance. While watching a pair of these birds so employed I was struck on the nose by a fragment of bark, although I was standing at some little distance from the tree on which the birds were at work. After examining the place thus laid bare the bird proceeds to another scale.—*Id.*

Martins near Christmas.—In the winter of the present year the cold weather came on us rather early, and the snow had lain on the ground for three days, with frost; the thermometer 33° in my bedroom. About mid-day a small flight of martins made their appearance, after having been lost to us for more than two months. They appeared much more active in hawking for flies than were blackbirds and thrushes, which indeed were much tamed by the cold.—*Jonathan Couch; Polperro, Cornwall.*

Occurrence of the Gray Phalarope (Phalaropus platyrhynchus) *at Swansea.*—A specimen of the gray phalarope was shot in this neighbourhood last week.—*D. Williams; 56, Wind Street, Swansea, November* 23, 1859.

The Arctic Tern (Sterna arctica) *nesting on Fresh Water.*—In Thompson's 'Birds of Ireland,' vol. iii. p. 295, it is stated that, "as far as the observation of the writer extended, the arctic tern selects only maritime localities for breeding-places." That the observation of so diligent and accurate a naturalist was in the main correct is highly probable; but it may be worth recording, if only as an exceptional case, that, upon the islets in Lough Carra, Co. Mayo, the arctic tern breeds in company with the common tern; for out of some six or seven birds which I shot there in June, 1851, at least two belonged to the arctic species; and I have their feet and skulls still by me, as a conclusive proof that there was no error made in the name. — *A. G. More; Vectis Lodge, Bembridge, February*, 1860.

Errata to the Article upon Rare Birds in the Isle of Wight (Zool. 6849).—P. 6851, line 12, instead of "birds" read "bird;" only one was shot. P. 6855, line 8, instead of "considered" read "considers." P. 6858, line 8, instead of "Normon" read "Mormon" (*i. e.*, Fratercula). P. 6858, line 7, instead of "certainly" read "sufficiently."—*Id.*

Occurrence of the Forktailed Petrel (Thalassidroma Leachii) *at Poole.*—On the 4th ult. I was fortunate enough, favoured by the heavy gales of that date, to make the acquaintance of this bird. It is a very fine specimen, and I have sent it to be preserved for our Museum of Local Natural History, Geology and Antiquities, which I am trying to establish here, in connexion with our Literary Institute. Is not this the first recorded instance of its having occurred in Dorset? A pair of them were observed in our harbour by one of our gunners (men who get a living by shooting wild-fowl), and he shot one for me; the other one he could not get at, and has not seen since. It is very rare here; none of the gunners or our harbour sportsmen knew what it was, or ever recollected having seen it here before as far as I could ascertain. I immediately recognised it as a petrel, the stormy petrel being occasionally seen near here; and my friend the Rev. Mr. Green, of Hamworthy Rectory, identified it for me as the forktailed petrel.—*William Penney; Poole, November*, 1859.

Capture of the Globe Fish (Tetradon stellatus) *in the Solent Water.* — A specimen of this fish was captured by one of our townsmen, G. Braxton Aldridge, Esq., in the Solent Water, about the middle of August last. He was fishing with a net near Beaulieu River, about four miles from Calshot Castle. At this place the tide falls very rapidly, and leaves the sands dry for miles out. After the tide fell, in a pit in the sand a commotion was observed amongst some sea-weed, and, going to see the cause, this fish was found. It is, I think, a fine specimen, measuring from head to extremity of tail 20½ inches. It answers exactly the description in Jenyns' Man. Brit. Vert. Animals, p. 490. It was sent to Mr. Hart, of Christchurch, who has preserved it very nicely; and will be deposited in our Museum. — *William Penney; Poole, November*, 1859.

Occurrence of a reversed Specimen of Helix aspersa.—It may interest some of your readers to know that a specimen of this rarity was found by Mrs. H. Adams, in the garden of my residence at Notting Hill, in the early part of last year. — *H. Adams; 19, Hanover Villas, Notting Hill.*

A List of Southport Spiders; with some Remarks on Uniformity of Use and Meaning of Words in Natural History. By The Rev. O. Pickard-Cambridge, B.A.

In addition to the supplement of my last year's list, I subjoin a list of spiders, observed and captured during the past season at Southport and in its neighbourhood. Local lists, besides having a local interest, are certain steps towards a more correct generalization, in regard to the distribution of species. In this list it will be seen that out of the two tribes of the order Araneidea known to inhabit Great Britain, but one is represented; of the families making up this tribe, nine out of ten are represented (the tenth, however, contains but one British genus and one British species); and out of twenty-eight genera composing the families eighteen are represented; and lastly, out of two hundred and seventy species contained in the twenty-eight genera eighty are represented.

I do not pretend to say that this is a perfect list, for on one side of Southport lies a vast tract of fen or moss land, which I have hardly ever had time to search at all; but the ground I have searched, principally the sand-hills along the coast, has been ransacked pretty thoroughly; and, therefore, as the area is so much the more confused, the list is perhaps of so much the greater value. The relative abundance of species in any locality is also, I think, of importance, but the words we commonly use to denote their abundance or the contrary are generally so vague, and used or understood by different naturalists in so different a sense, that I will just in a few words try to explain the value of the general terms "rare," "common," &c., appended to the names in the list, as I use and understand them.

The term *very common* is used to denote that the species may be taken, in its season, in the locality in question, as we should say in popular language "in any numbers," that is, that a hundred or so might be captured during an afternoon of four or five hours, and this without any special search for it.

Common denotes that, in popular language, "a great many" might be taken in the above time, that is to the number of, say, forty or fifty, and this with but slight search specially for it.

Frequent denotes that a score or so might be taken, in the same time, with an ordinarily careful search for it.

Not rare denotes that a close search will generally procure what we call "a few," that is, from five to ten or a dozen.

Occasional denotes that during the time stated, and with careful search for it, two or three may be captured.

Rare would show that a specimen only would be likely to be obtained, as we should say "once now and then," that is, about once out of several afternoons' very careful search.

Very rare would denote that one or two specimens in the run of a season, would be all that a careful search and open-eye for it would obtain.

It will perhaps appear trivial to some to attempt to define these general expressions. It is, I admit, very difficult to do so, for we know that their force will vary according to the number of hours, or the state of weather, during which the search is carried on; and again, according to different persons' powers of close search, that is, their power of concentrating the attention on one object, for this is really, I believe, the secret of obtaining so-called rarities. And again, the knowledge or ignorance of the habits of the species searched for, and in fact many other things, will come in to prevent perfect uniformity of meaning, whatever terms we may choose for the purpose of specifying relative abundance; yet the want of a little more accuracy and uniformity than now exists will always, it seems to me, take away more than half the real value of local lists of species. And in regard to other parts of Natural Science, the want of uniformity of use and meaning, has produced and still produces great confusion and hindrance; I allude to the sense attached by different naturalists to the words "order," "family," "tribe," "genus," "subgenus," &c. And how few systematic works on Natural History state the principles of their systems, the meanings of their classification, the values of their divisions; what one may call a "tribe" another calls a "family," and so on. And even the careful reader is often compelled to stop in the study of his favourite branch of Natural History, perplexed by a perfect labyrinth of classification, and without any clew as to whether his author looked on the names of the divisions of his system merely as bare landmarks to direct the traveller into unknown regions, or as terms to point out real divisions written and existing in Nature herself, and so only to be set up where the divisions exist in Nature, without regard to the mere convenience of students and collectors. So that I repeat the want of attention to an uniformity of use and meaning of words does seriously retard the science of Natural History, with reference to its injury to the science of classification. I have perhaps strayed from my immediate object in mentioning it now, though I hope some day to recur to it again. To return to our present subject, I by no means stickle for the use of the words "common," "rare," &c., in the senses in which I have now used them; I only throw out these as hints, and should like to see such practical entomologists as my friends Frederick Bond, H. Harpur Crewe and Edwin Shepherd, &c., putting forward in your pages the senses in which they use and understand these or equivalent words. Local lists, even with all this, and much more care, will yet be imperfect, but without it they will be both practically and theoretically valueless towards the great object of such lists, the constructing a scientific system of distribution and relative abundance of species.

Tribe OCTONOCULINA.—Family LYCOSIDÆ.

Lycosa Agretyca. Frequent. Among grass and herbage on banks and sides of ditches, &c.

L. campestris. Not rare. In same places as L. Agretyca.

L. andrenivora. Very rare. On the open sand hills.

*L. nivalis. Common. Running on the sand hills in sunshine.

L. rapax. Frequent. In company with L. Agretyca.

L. picta. Not rare. On the open sand hills.

L. saccata. Frequent. On moss land, &c., among grass.

L. obscura. Occasional. In company with L. saccata.

L. exigua. Very common. Almost everywhere.

L. cambrica. Not rare, but very local, among grass in the "stacks."

L. piratica. Frequent, but local, in same localities as L. cambrica.

Family SALTICIDÆ.

Salticus scenicus. Not rare. On walls, posts, palings, and occasionally under ledges on the sand hills.

S. sparsus. Rare. On trees, among grass stems and on walls.

*S. floricola. Very rare. At the roots of grass, &c., on the "north sand hills."

S. frontalis. Frequent. At roots of grass and rubbish, on bank-sides, &c.

S. cupreus. Very rare. In company with S. frontalis.

Family THOMISIDÆ.

Thomisus cristatus. Occasional. On the bare ground and at grass-roots.

T. audax. Very rare. On the bare ground and at grass-roots.

Philodromus cespiticola. Frequent. On dwarf willows on the sand hills.

P. oblongus. Common. At the roots and on the stems of the "star-grass."

Family DRASSIDÆ.

*Drassus pumilus. Rare. On the bare sand hills, and at roots of grass and moss.

*D. clavator. Very rare. Under ledges of sand hills, at roots of grass and under stones.

D. cupreus. Frequent. Under ledges of sand hills, at roots of grass and under stones.

D. nitens. Not rare. Among rubbish on dry bank sides; and in spring, the adult males running on paths and roads.

Clubiona holosericea. Occasional. In angles of summer-houses and in curled leaves.

C. amarantha. Frequent. At roots of star-grass and in curled leaves.

C. epimelas. Rare. In curled leaves and in holes in posts, &c.

Argyroneta aquatica. Occasional. In moss-dykes, among water-weed, &c.

Family CINIFLONIDÆ.

Ciniflo atrox. Not rare. Under ledges of sand hills, overgrown with dwarf willow.

C. similis. Not rare. In outhouses and unused rooms, &c.

Ergatis benigna. Very rare. Running on paths in spring.

E. latens. Rare. Running on paths in spring.

Family AGELENIDÆ.

Agelena labyrinthica. Very common. All over the willow-clad sand hills.

A. brunnea. Not rare. At roots of star-grass and weeds, &c.

Tegenaria civilis. Frequent. In outhouses and old unused buildings.

Family THERIDIIDÆ.

Theridion lineatum. Common. Almost everywhere.

T. quadripunctatum. Rare. In summer-houses and unused rooms.

T. nervosum. Not rare. On bushes, &c., in its web.

T. pictum. Not rare. On hollies and in greenhouses.

T. varians. Frequent. In company with the two last.

T. carolinum. Common, though local. Among dwarf willow and herbage on the sand hills.

T. pallens. Rare. On Scotch firs.

T. variegatum. Occasional. Among grass and weeds on dry banks.

T. filipes. Rare. Beneath sea-weed on the shore.

Family LINYPHIIDÆ.

Linyphia montana. Frequent. On Scotch firs, &c.

L. marginata. Frequent. In hedges and in angles of outhouses.

L. pratensis. Frequent. On low plants, &c., in woods.

L. fuliginea. Rare. Among star-grass, &c., on sand hills.

L. minuta. Not rare. Ditto (and in porches and unused rooms).

L. alticeps. Frequent. Ditto.

L. tenuis. Common. Ditto.

L. terricola. Common. Ditto.

L. anthracina. Rare. Ditto.

L. pulla. Rare. Ditto.

L. ericæa. Frequent. Ditto.

L. tenella. Very rare. Ditto. The male adult new to Science.

Neriene bicolor. Frequent. At roots of star-grass on sand hills.

N. gracilis. Occasional. Running on walks, rails and pavements.

N. cornuta. Occasional. Among grass on sand hills.

N. apicata. Very rare. Ditto.

N. longipalpis. Common. Among grass, under sea-weed and on pavements.

N. fusca. Rare. Under sea-weed in autumn.

N. agrestis. Rare. Ditto.

N. vigilax. Very rare. Among grass on sand hills.

N. trilineata. Common. Ditto.

N. variegata. Frequent. Ditto.

*Walckenäera Aggeris. Common. Among rubbish and grass on dry bank sides on " north sand hills.

*W. monoceros. Very rare. Among grass and moss on sand hills.

*W. fastigata. Very rare. Ditto.

Pachygnatha Clerckii. Frequent. Under wall, Formby Parsonage.

P. Degeerii. Frequent. Among grass and moss on sand hills, and adult males running on roads in spring.

Family EPEIRIDÆ.

Epëira quadrata. Frequent. On bushes, &c.

E. apoclisa. Common. On plants, &c., at edges of dykes especially.

E. solers. Very rare. Among dwarf willows on sand hills.

E. similis. Common. In balconies, windows and greenhouses.

E. calophylla. Occasional. On bushes and dwarf willows.

E. cucurbitina. Rare. Ditto.

E. inclinata. Very common. Everywhere.

E. diadema. Very common. Ditto.

Tetragnatha extensa. Frequent. Among herbage and low plants in damp places and over water.

PS.—Those spiders, the names of which are marked with an asterisk, are either new to Science or to Britain. (See "Supplement to a Note on Arachnida of Dorset, &c.," Zool. 6700.)

O. P.-CAMBRIDGE.

Southport, Lancashire,
January 17, 1860.

On the Functions of the Antennæ of Insects.—Every entomologist must be familiar with the fact that when a moth singes its antennæ in the flame it is more or less incapable of directing its flight, and usually spins in circles on the surface with which it may come in contact, with its head downwards. For a long while I supposed that this was a mere expression of pain, until I experimented in various ways with this instrument for the purpose of ascertaining its function. My first experiments consisted in the excision of the antennæ, immediately above the bulbs, in the male Saturnia Cecropia, as soon as it had escaped from the cocoon, and before expansion of the wings had begun. The circulating fluids exuded, and soon formed over the cut surface a clot, by which it was permanently closed. There was no escape of air from the severed tracheal trunk, nor any indications of respiratory effort on the part of the imago, neither was the globule of fluid taken up through the tracheal trunk. The mutilation gives rise to very little expression of pain after the first shock of the operation, and the imago fixes itself as usual to expand its wings, expansion taking place as completely as in the unmutilated specimen. On the approach of night the mutilated male makes no voluntary effort to use its wings. He is gentle and docile, and permits himself to be handled without betraying a desire to escape or any sense of danger. If at this time one endeavours to compel him to fly, he agitates his wings with a trembling motion; and if thrown into the air, uses them so ineffectually as not to break the force of his fall, or so as to precipitate him head foremost to the earth, with a shock that appears to benumb him. By persistence he is at last, perhaps, driven to use the organs of flight; but whilst employing them with vigour his position is reversed in mid-air, and he descends to the earth, vainly endeavouring to change it or arrest his fall; or he dashes himself with violence against some obstacle, thus bringing his flight to a sudden conclusion. The power to hover has been completely lost. After a few efforts of this kind it becomes almost impossible to compel a mutilated specimen to attempt flight. It will remain fixed in one place for two or three days, and at the end of that time may make a voluntary effort to use its wings. The irregularity, not to say the madness of its flight, is no less observable than in the beginning. Under these circumstances one of my specimens escaped into the open air from my study in day-light. After extricating himself from amongst the branches of a tree standing near the door, he arose into the air in a spiral track, around which he ascended until attaining a height at which he was almost lost to sight. Here he maintained himself by sailing on his wings, until I lost sight of him by intervening houses. But though I placed myself quickly in a position to see him again, he was nowhere visible, and must have descended suddenly from mid-air. The males of the same species, taken by what is called pairing, in full possession of all their powers and instincts, and animated especially by the sexual instinct, are strongly attracted by light. If the light in a room be so guarded that the specimen cannot injure itself, and a perfect male be held by the thumb and fingers beneath the wings and thrown with force in a direct line from the light, the individual, by the use of the wings, will arrest himself as the force of the impulsion diminishes, and, reversing his position in the air, will return to the light in a direct line. This may be repeated any number of times, and will be followed invariably by the same result. Let the antennæ of the specimen then be excised in successive portions. The excision of the upper third does not diminish the power to arrest itself and to return again in a direct line; but, beyond this point, flight begins to be impaired without effecting in any manner the desire to return, until at last we reach a point where it becomes evident that the voluntary direction of flight is no longer under the volition of the insect, or that some co-ordinating influence is wanting, having special relation to the direction of flight, or the uses of the muscles of the alary organs. Instead of being capable of arresting itself and returning in a direct path, the insect now darts from the point of arrest to the right or left, to the ceiling or the floor; and this uncertainty of direction and inability to arrest the force of impulsion continues to increase until we reach the neighbourhood of the bulb, when the voluntary employment of the wings almost ceases. All these results are obtained simply by the excision of the pectinations of the antennæ, leaving the antennal stalks uninjured. The desire to fly is not affected in the first place, and it is only after the individual ascertains the uncertain nature of his efforts that he fixes himself in a state of rest. The structure of the organs, together with these experiments, entirely justify the inference that the antennæ, instead of being organs of any special sense, as they are usually regarded, are, in Lepidoptera, instruments of atmospheric palpation, having especial reference to the action and use of the wings in flight. This conclusion has been reached contrary to my own preconceived ideas of the functions of those instruments; and I believe the view here taken is entirely new. Should the experiments be repeated by any observer, he should be careful to select for experimental study those lepidopterous insects that are unprovided with simple eyes or ocelli on the vertex at the base of the antennæ. In those species with ocelli on the vertex flight is deranged scarcely at all, as compared with the effect of antennal excision on individuals unprovided with these organs. — *Dr. Clemens, in the 'Journal of the Academy of Natural Sciences,' Philadelphia.*

Argynnis Lathonia.—I see that the question of the indigenous character of this insect is still doubted by the members of the Entomological Society and others. I may state, upon the authority of Dr. Maclean, who is one of the best observers with whom I am acquainted, that he is in possession of evidence which clearly and beyond all doubt proves that this insect not only is taken but breeds in this neighbourhood. He has taken the insect both in spring and autumn, and one female which contained fully developed eggs. The insect has been taken in this neighbourhood by at least three, if not four, different people.—*C. R. Bree.*

Vanessa Antiopa in Wakehurst Wood.—A beautiful day was the 6th of April, 1859; the sun shone most brilliant, and as hot as in July. I was walking through Wakehurst Park, Sussex. All at once I saw something flying which appeared unusual; it was about twenty yards from where I stood, but the leafless branches of an oak were between me and the object, so that I could not distinctly see what it was. I thought it settled a little beyond the oak, and immediately went towards it. At this spot the underwood was cut, but the heath, intermixed with the dead fronds of the brake, was as high as my knees. Amongst this I was cautiously stepping, when, to my great surprise, a most beautiful large Vanesssa Antiopa came flying slowly towards me, and passed within a few feet; so close was it that I could see the angles of the beautiful broad white border and of the wings. To capture it I had no means; even if I had it would have been difficult, on account of the unevenness of the ground and the height of the heath. With the sun shining it looked as bright as if it was just from the pupa; but I suppose it had hybernated.—*Edward Jenner.*

Early Appearance of Dasychira pudibunda.—On the 3rd of this month a fine specimen of this moth emerged from the chrysalis. For a short time it was very active, but it has been ever since quiescent, perhaps torpid. The caterpillar spun its cocoon on the 29th of last September, and the chrysalis was kept in a room the temperature of which, in winter, never varies more than a few degrees from 62° day or night. I suppose it is this comparatively high temperature which caused the fly to appear at this unusual time of the year.—*Thomas Clark; Halesleigh, January* 17, 1860.

Description of the Larva and Pupa of Endromis versicolor. — In April the female lays her eggs on the slender twigs of the birch tree, and the caterpillars come out about the 1st of May. At first they are gregarious, spinning a web over the twig and attaching themselves by their claspers, and holding their heads straight up in the air; when just hatched they are smoke-coloured, with a darker line down the back, and a dark oblique mark on each segment: there are pimples or warts all over the body, each emitting five or six black hairs; the lip in front of the head is yellow, and there are two yellow crescent-shaped marks immediately behind the head: the legs are reddish yellow. After changing its skin the first time, and eating its cast-off coat, an operation which it invariably performs, the caterpillar becomes of a dull pale green colour, covered with minute black points, and having a conspicuous narrow dark line down the middle of its back; on each side is a series of paler green diagonal lines; the head is yellowish, with two pairs of longitudinal blackish stripes, and a black spot between them; the claspers are yellow. After the second change, the caterpillar becomes a bright apple-green colour, still powdered with innumerable minute black points on the sides and claspers: the back is whiter green, with a narrow dark line down the very middle; there is a pale oblique stripe on each segment, bordered with darker green; the second, third and fourth segments have a whitish line on each side; the head has two blackish longitudinal lines on each side. The third change produces little difference in colour. When full-grown, and after it has changed its skin four times, the caterpillar is 1½ inch long and very stout, its colour green, paler and whiter on the back, darker and richer on the sides and belly, where it is also thickly sprinkled with minute circular black dots: the spiracles are white, with a black edge; the head pale green, with four white longitudinal stripes, the outer ones broadest; a narrow dark green line runs down the very centre of the back: on each side of each segment is an oblique white stripe, bordered on each side with darker green; all these white stripes commence near the straight green line on the back, and each is continued faintly on the segment next to that which it adorns: on each side of each of the three segments nearest the head is another short raised white stripe: the twelfth segment has a hump on the back, ending in a short blunt white horn, which has a delicate black line behind; from this horn descends a short white stripe, and below the spiracle on the same segment is another white stripe bordered above with black. This caterpillar feeds only on the birch throughout May and June; it then descends the tree, and spins. The cocoon, or rather web, in which the larva effects its change, is attached to fallen leaves or twigs on the surface of the earth: some of the larvæ make shallow furrows in the earth, covering themselves above with a leaf; the web is made of brown silk, and is constructed like open net-work, so that water can freely pass in and out. The pupa is black-brown, and, immediately after changing, appears to be covered with a slight bloom, like that of a ripe plum; this appearance, however, gradually subsides, and in a few days has entirely vanished: the pupa is scabrous, the scabrosity consisting of numerous small and nearly confluent warts or pustules; on the case covering the antennæ these warts are arranged in regular series, and have a remarkable and very pretty appearance; on the hinder segments of the pupa these warts are changed into blunt spines or teeth: the caudal horn of the larva is still preserved in the pupa, is incurved, and beset with spiny warts which point outwards, the incurved apex being furnished with about twenty red-brown bristles.—*E. Newman.*

Notes on the Economy of Lepidoptera. — 1. Phtheocroa rugosana. May 25. Bred this insect from a very tough cocoon, fastened to the inside of my breeding-cage, by what larva I do not know. June 29. Took P. rugosana, beaten out of yew hanging over breeding-cage in which first specimen occurred. Query, did it come out of yew, and retire into breeding-cage, as it might have done through the chinks, to form pupa? Doubtless, as I find from Wilkinson, it feeds on Bryonia dioica, a plant of which grew under the yew tree last season and climbed among the boughs. 2. Diloba cæruleocephala. June 19. A larva has just made a papery cocoon in corner of cage, having helped himself to two F. nitidella cases, insects and all, wherewith to make it. Whether he ate the inmates I cannot say, but they never appeared in the perfect state. 3. Coleophora vibicella. July 5. At French Wood took a number of cases in pupa state, from some of which the moths were just emerging. I found the insect entirely confined to a warm south bank on the edge of the wood, where the food-plant grew stunted. I never saw it in the wood, though the plant was abundant, but of ranker growth. 4. Hyponomeuta evonymellus, H. malivorella and H. padellus. June 11. I have lately examined the respective larvæ of H. evonymellus and the supposed H. malivorella, or H. malellus (Stainton's 'Tineina,' p. 60). It is impossible to distinguish them by their markings, though one might fancy the latter rather yellower. I shut up some of H. evonymellus? (the spindle-feeder) for three days with apple leaves, from the same tree on which H. malellus was feeding; but they did not touch them. They both go into pupa about the same time.

July 6. Bred H. padellus from hawthorn; very common, and both larva and imago decidedly distinct from H. malellus, both being much darker. 5. Stauropus Fagi. August 8. My S. Fagi larva is now nearly full-fed. His attitude, when disturbed (one rarely sees him feeding at ease), is with head and tail meeting over back, and his long legs extended, sometimes with a vibratory motion, in front. The creature seems peculiarly unfitted to walk on a flat surface; it therefore attaches itself by its prolegs to a twig at the bottom of a leaf; then, holding the edge of the leaf at right angles to its mandibles by its long front legs, and beginning at the bottom, it eats its way towards the top, leaving the central rib of the leaf for a support as it advances upwards, till the whole side of the leaf is eaten. 6. Stenopteryx hybridalis. Sept. 15. Another S. hybridalis in hop-yard. The slow, weak flight of this insect, at this time of year, is very remarkable, as compared with the rapid, darting motions it makes in hot sunshine in the summer. The only other specimen I ever took in this neighbourhood was on the 20th of October, 1854. I have never seen it in the summer here, though it is so common in burnt-up ground on the coast. The habits of the two broods, according to my experience, are so unlike that I should be glad to hear more about the insect.—*E. Horton; Wick, Worcester, January* 23, 1860.

Companion Larvæ.—Some insects are never found *per se;* they are always in company with others; as, for instance, the ants'-nest beetles and the mysterious inhabitants of the wasp's nest. Many might have imagined that the character of "lick-spittle" was confined to the human race; but no, in this we have our corresponding types, clearly manifesting that we and other creatures of a far lower grade are (according to Darwin) descended from a common ancestor. It is well known that some of the "knot-horn" larvæ, such as Acrobasis consociella, A. tumidella, &c., make large habitations of a handful of oak-leaves, in which a whole brood live sociably together; it now appears that these insects keep companions, a Gelechia being attendant upon each gregarious "knot-horn;" thus, Myelois suavella is accompanied by Gelechia vepretella (*Zel. MS.*), Acrobasis consociella by a yet undetermined species of Gelechia, and a still unascertained larva of one of the Phycidæ, which abounds on hawthorn near Vienna has Gelechia spurcella for its hand-maid. Do these Gelechia larvæ feed on the "frass" of the Phycidæ?—*H. T Stainton; Feb.* 6.—'*Intelligencer.*'

On the Double-brood Question, as it affects Fidonia conspicuata.—My friend Mr. Greene appeals to me on this question, and I have much pleasure in stating that I do not think any subject in Natural History is better known than the economy of Fidonia conspicuata. There are two broods,—the first in May and the second in August,—and in the proper locality the insect may be taken in abundance at these seasons of the year. After the May brood disappears the larvæ may be collected in any quantity; they feed up and are in the pupa state by the beginning of July; from this state they emerge towards the end of July, and continue on the wing most of August. The larvæ feed up and go in the pupa state into winter quarters by the beginning of October, and re-appear the following May. I do not think any proper inference can be drawn from what takes place in the transformation of insects in the house; their changes are adapted for out of doors. I have at the present moment some of the beautiful hybernating larvæ of Limenitis Sybilla swinging in their snugly formed hammocks from the branches of the honeysuckle, as they were shown to me by Dr. Maclean, of this place. Now these little fellows, perhaps only a week old, will bear any amount of cold, but they die if confined in the coldest room of the house; so it is with the frequently observed and written-about changes of various insects.

Surely if insects are regularly taken in numbers at two distinct periods of the year the evidence is sufficient that they are double-brooded. The case of Gonepteryx Rhamni, in which the perfect insect may be taken in every month of the year, is one which fairly admits of argument, because Dr. Maclean and others who have closely watched the economy of the insect, say they are quite sure there is only one brood of larvæ in the year; but where the larvæ and the imagos are found twice there is, in my opinion, no room for doubt.—*C. R. Bree.*

Some Notes on Fidonia conspicuata.—I hasten to comply with the request of my friend Mr. Greene, that I should tell the readers of the 'Zoologist' all I know concerning the habits and transformations of Fidonia conspicuata, *W. V.* During two years residence at Stowmarket, in the neighbourhood of which town this insect occurs in some plenty, I had an opportunity of becoming tolerably well acquainted with its economy. Upon referring to my note-book I find the results of my observations to have been as follows:—

1857. May 11. Fidonia conspicuata flying sparingly.

May 19—27. Plentiful.

June 8. Not a moth to be seen.

Eggs laid May 22 hatch in about ten days, and are full fed and spin up the end of June.

July 19—26. Perfect insects keep appearing in my breeding-cage, and are flying in great plenty in the broom-field.

August 14. Beat a number of full-fed larvæ in the broom-field.

1858. May 4, 10 and 19. Fidonia conspicuata flying sparingly.

May 26—28. Abundant.

June 8. Have a number of young larvæ just hatched from eggs laid the end of May. Upon visiting the broom-field, a few days afterwards, beat a number of very small larvæ. At the end of the month find them all full fed.

July 15, 17. Perfect insect flying in numbers.

Middle to end of August. Find plenty of full-fed larvæ.

Mr. C. R. Bree, who lived for a number of years at Stowmarket, can testify that these results occur as regularly as clock-work every year, the time of appearance being slightly accelerated or retarded by the warmth or coldness of the season. The July flight is, as Mr. Bree most correctly states, much more plentiful than the one in May, and, as a general rule, the insects are smaller in size. As I could so readily take the perfect insect I never took much pains to breed it in confinement. In 1857 a few of the summer batch of pupæ did not emerge in July, but remained over till the following spring, but that, in my opinion, in no way militates against the fact of the insect being double-brooded. I am not going again to break a lance with my friend Mr. Greene on the field of double-broodedness. I have already argued the point at some length, both in the 'Zoologist' and 'Naturalist,' and the indefatigable exertions and perspicuous revelations of Mr. Gascoyne have unalterably fixed an opinion previously formed. I only wish to remark that I never asserted or contended that the whole of the summer brood of larvæ produced moths the same year (though Mr. Gascoyne's experiments show that this is frequently the case, and his experiments were made with larvæ kept out of doors and on growing plants). All I formerly contended for, and what I contend for now, that if *any* part of the summer brood of larvæ produce perfect insects the same year, which pair lay eggs and produce full-grown larvæ and pupæ in the autumn, then the insect to which these results occur is double-brooded. For instance, F. conspicuata appears for the first time at the beginning of May; it lays eggs, and its progeny are full fed and spun up at the end of June. From these pupæ a number of moths emerge, pair and lay eggs from the middle to the end of July, and the larvæ are full fed the middle or end of August. *Ergo*, F. conspicuata is double-brooded. Mr. Greene contends that unless the whole of the summer brood emerge the same year the insect is not double-brooded; but this appears to me to be splitting a hair. Every one knows that in the case of acknowledged single-brooded insects,—*e. g.*, Smerinthus ocellatus and S. Populi, Sphinx Ligustri, Cerura vinula, C. bifida and C. furcula, Bombyx Quercus, Saturnia Carpini, Acronycta megacephala, Dianthæcia carpophaga, &c.,—several pupæ out of a brood will very frequently remain two years before emerging, yet no one would, on this ground, dream of contending that these insects were not annual-brooded. Whether an insect be single or double-brooded the appearance of all or part of those broods is a point upon which, I believe, no certain rule can be laid down. These matters are all directed by the masterly hand of an All-wise Providence, who so orders them that no vicissitudes of climate, temperature or weather has any serious effect upon the existence and continuance of a species.—*H. Harpur Crewe; Ivy Cottage, Wickham Market, Suffolk, February* 3, 1860.

Description of the Larva of Eupithecia castigata.—Long, slender and tapering. Ground-colour pale or dusky olive or reddish brown, with a chain of dusky lozenge-shaped dorsal spots, becoming confluent on the anterior and posterior segments. Segmental divisions reddish. Body thickly studded with minute white tubercles, and clothed more sparingly with short bristly hairs. Belly with a central blackish or purplish line running from tip to tail. Feeds promiscuously upon almost every tree, shrub and flower, in August and September. In almost every particular closely resembles the larva of E. vulgata. Pupa enclosed in an earthen cocoon. Abdomen slender and tapering, reddish or greenish yellow. Thorax and wing-cases yellow; the latter more or less suffused with green.—*Id.; January* 31, 1860.

Description of the Larva of Eupithecia minutata.—Short, thick and stumpy. Ground-colour dull pink or flesh tint, with a series of dusky Y-shaped dorsal spots connected by a central pink line, and becoming faint on the anterior, and almost obliterated on the posterior segments. Each dorsal segment studded with four yellowish tubercles. Spiracular line yellowish, interrupted at intervals by dusky blotches. Head dusky olive, marked with black. Belly dusky or pinkish white. Back thickly studded with small white, and a few black tubercles, and sprinkled here and there with short hairs. Feeds on the flowers of Calluna vulgaris in August and September, and is by no means uncommon where that plant occurs in any plenty. Pupa enclosed in an earthen cocoon. Short and thick. Thorax and wing-cases golden yellow; abdomen yellow, generally suffused with red. Wing-cases very transparent. Tip of abdomen blood-red.—*Id.*

Clostera anachoreta in the "Home Counties."—"Home counties" is the only locality I have ever publicly given for Clostera anachoreta, and the only one for which I will be responsible. The statement in the 'Annual' that I took it in the "neighbourhood of London" was published without my knowledge or sanction.—*H. G. Knaggs; 1, Maldon Place, Camden Town, N.W., January* 20, 1860.

Food of the Larva of Depressaria ultimella, Staint.—The larva of this species appears to be unknown. I bred a specimen early in June from a larva found feeding on the flowers of Conium maculatum, near Freshwater, Isle of Wight, last May; the larvæ were gaily coloured, and, judging from descriptions, must resemble those of Depressaria nervosa. Mr. Bond, who was with me at the time, saw them, but considered them to be those of D. heracliana. Perhaps this may serve as a hint to those who are looking for it, where to find it.—*H. S. Gorham; 10, Alfred Street, Montpelier Square, Brompton.*

Cryphalus Fagi, Fabr.—About Christmas, last year, I found several specimens of this species in the bark of a decaying beech near Westerham. With the exception of the specimen exhibited by Mr. Janson at the February meeting of the Entomological Society, I believe it has not been met with previously in Britain.—*Id.*

Capture of Diachromus germanus at Hastings.—A specimen of this insect was taken on the 25th of September, 1859, by Henry Case, Esq., in the neighbourhood of Hastings, and, through the kindness of Mr. Case, the specimen is now in my possession. I have little doubt that additional specimens may be secured in the ensuing season, if *power*ful efforts are made.—*Henry Adams.*

Facts connected with the History of a Wasp's Nest; with Observations upon the Parasite, Ripiphorus paradoxus. By S. Stone, Esq., F.S.A., &c. *

OBSERVING a number of wasps entering an aperture in the ground, at Cokethorp Park, on the 25th of July, I revisited the spot in the evening, with the view of obtaining the nest. Accordingly, having taken the precaution to render the inmates insensible, by pouring a wine-glass full of spirits of turpentine into the aperture, which was then closely stopped up with clay for a short time, I proceeded to dig it out. In doing this, so hard and dry had the ground become that I broke the covering to pieces, displacing and scattering the combs. Finding that I had utterly ruined the nest as a specimen, I determined, at any rate, on securing the combs; I therefore began to collect them, and, placing them singly on the floor of the vehicle in which I had driven to the spot, brought them away, unaccompanied by a single wasp, the whole number, including of course the foundress of the colony, being left behind. The nest was one belonging to Vespa vulgaris, and being composed of decayed wood its destruction was the more complete, for so fragile are nests of this species that even a touch of the finger, unless extraordinarily light, is fatal to their beauty.

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* Read before the Entomological Society of London, November 7, 1859.

On reaching home I passed a wire through the centre of each comb, just as people are in the habit of filing bills, placing between the several tiers, by way of supporting columns, small fragments of Celtic pottery I had obtained in prosecuting some archæological researches in the neighbourhood, and which happened to be the most convenient material for the purpose I could at the moment lay my hands upon. Having so done, I suspended this archæo-entomological specimen near the window of a room in which I had established a working community of the same species of wasp, procured on the 24th of June, when a body of workers at once passed over, and the next morning were found to be busily engaged in feeding the larvæ the combs contained, and in the construction of a fresh covering. In the course of a week the combs were completely enclosed. In a few days after this Mr. Douglas's note on parasitic beetles appeared in the columns of the 'Intelligencer;' and on the 10th of August I forwarded to that gentleman, for identification, a specimen of Ripiphorus paradoxus I had obtained in the immediate vicinity of the nest above-mentioned, and in which it had doubtless been bred.

On the morning of the 15th of August I was watching the progress of the work, and, in order to be enabled to do so the more narrowly, was holding the nest in my hand by the wire which supported it, when a second specimen bolted out, followed immediately afterwards by another. As Mr. Douglas had stated that it was desirable some observations should be made upon the habits of these parasites, if an opportunity of doing so presented itself, I thought now was the time; so I contrived to rid the nest, there and then, of the more active wasps it contained; and, taking it into an adjoining room, proceeded to denude it, with the aid of a pair of scissors, of its recently-formed covering. While preparing to perform this operation, as well as while it was being performed and for some time afterwards, the parasites continued to emerge at short intervals; so that between the hours of 10 A.M. and 2 P.M. twenty-eight specimens had made their appearance.

This nest, be it observed, had been removed from its original situation exactly three weeks; consequently all the eggs (I am speaking of those of wasps) deposited prior to that event must have produced larvæ, the larvæ must have all become full-grown and spun up, while such as had made any progress in their growth at the time the nest was removed must have undergone their final change into perfect wasps. Great was my astonishment, then, on removing the covering, to find the cells containing not only larvæ in every stage of their growth, but eggs also in vast profusion. All the larvæ that had attained anything like their full size, or even half their full size, were found to occupy each a separate cell, as is observed to be invariably the case in all well-ordered nests, the parent wasp depositing only a single egg in each cell; but in the present instance, where the larvæ were minute in size, groups of three, and even four, apparently varying slightly in age, were located in one cell. Some of the cells contained an egg and one or two small larvæ; and some, two or three eggs, a single egg in a cell being of rare occurrence. Many of the cells had been almost demolished since the nest had been removed from under ground, the walls having been gnawed away nearly down to their base; yet they contained eggs or small larvæ. That the larvæ were those of wasps (I had a faint hope they might have turned out to be those of Ripiphorus) the testimony of Mr. Douglas, to whom some were sent for examination, proves beyond a doubt. It may be well to remark that no additional cells had been formed in any of the combs since their first removal.

Neither among the wasps driven out of the nest before the covering was removed, nor among those found to be congregated between the combs after it had been removed, was one single individual observed larger than a full-sized, plump worker; nor, indeed, was it to be expected, for it was at far too early a period in the season for the young females, which are destined to become the foundresses of colonies in the ensuing year, to have made their appearance; nor could the presence of a single male be detected; and as the cells contained, as before stated, larvæ in every stage of their growth, as well as nymphæ in every stage of their advancement toward the perfect state, it is obvious that since the removal of the nest from its underground situation the process of egg-depositing must have been going on from the first, at which period it is certain none but workers could have been produced in any nest of this species. It must, therefore, have been by one or more individuals of this class that these fertile eggs were produced!

I may be allowed to cite two or three additional instances bearing upon this subject.

In a paper upon wasps, by Dr. Ormerod, of Brighton (Zool. 6641), mention is made of a nest of Vespa britannica (norvegica, *Smith*) having undergone three removes. On its first removal the stragglers, four in number, among which, the writer remarks, "no wasp distinguishable by her larger size could be seen," set about the construction of a fresh nest, which in the course of ten days was found to contain a small comb, consisting of eight cells, "with distinct eggs in them." These eggs, it appears, came to nothing when the nest was sent to the writer, at Brighton,—a circumstance doubtless arising from some cause connected with its removal. On the original nest being removed a second time, it is stated that the stragglers, which were more numerous than on the former occasion, built another. This in the course of two or three weeks was found to contain "two tiers of cells, the upper one full of grubs."

On the 12th of last July I dug out a nest of Vespa rufa. It was situated in the deserted burrow of a mole. The parent wasp and a few of the workers were brought away with it, while the rest, about thirty in number, were left behind. These were soon observed to be busily engaged in constructing a fresh nest in the same burrow, and close to the spot from which the former one had been removed. On the 26th I took possession of this nest, which measured about 1½ inch in diameter, and contained a small comb of an irregular shape, the cells in which numbered thirty-two, some containing eggs, and some small larvæ. The covering of the nest was at least four times the thickness one of the same size, constructed by a single female, would have been. None but wasps of the ordinary size, or those commonly known as workers, were found to be connected with it.

Now, although these facts may not amount to absolute proof, do they not point to the probability that, in colonies of wasps, the workers, or imperfectly-developed females, may become so far developed as to have the power of producing fertile eggs, and that without previous connexion with the male sex? This further development, however, does not ordinarily take place, occurring only when some extraordinary circumstance has arisen which renders it necessary or desirable.

I must now return to the parasites, which, as already stated, continued to emerge from the cells after the covering of the nest had been removed.

The lower comb contained twelve covered cells, and to these my attention was principally directed, in consequence of the cap or covering of each appearing to me to be more pointed in form than those usually spun by the larvæ of wasps. Presently I observed a pair of jaws, from the inside of one, running rapidly round the crown, and cutting a circular piece not quite out, but sufficiently near to enable the insect, which proved to be a specimen of Ripiphorus, to effect its escape by pushing up the piece it had cut, and leaving it like the lid of a vessel attached by a hinge, just as the great saw-fly operates upon the top of its cocoon. On a close inspection of the interior of the cell after the insect had quitted it, I could detect the presence of nothing to indicate that the parasite was not the original, or had not been the sole, tenant. This fact, coupled with the pointed form of the covering, led me to think it not improbable that an analogy might exist between the habits of this parasite and those of the cuckoo,—that as the egg of the latter is palmed off upon the unsophisticated, unsuspecting wagtail as one of her own, so might those of the former be palmed off upon the nursing wasps as genuine eggs of their own species; and that the larvæ might be nursed, tended, fed and brought to maturity by the attendant wasps, just as the dupe of a wagtail brings to maturity the young cuckoo.

Unaware that this idea had been entertained by any one previously, I mentioned it in a note to Mr. Douglas, who informed me that Latreille had inferred as much from observations he had made. Had my attention been directed to the subject at the time I first obtained possession of this nest, I should doubtless have been enabled to prove the soundness or unsoundness of the above conjecture; as it is, the question must remain an open one till another year, when I hope to have an opportunity of deciding it.

The parasites betake themselves to flight, leaving the nest in all haste the moment they have freed themselves from the cells, as though afraid to prolong their stay among those upon whom they have so long and so successfully imposed, now that they have thrown off the cheat and appeared in their true colours. How the parent insects contrive to enter the nest with impunity, and deposit their eggs without molestation (always provided they do enter it for that purpose), is a point upon which renewed observations, made at an earlier period in the season, may possibly throw some light. It may probably be found that they do not actually enter the nest, but content themselves, like Sitaris, with depositing their eggs somewhere in the immediate vicinity, trusting, as Sitaris does, to the exertions of the larvæ to gain access to the cells in the best way they can; and when the latter have done this there are two courses open to them, one of which it is clear they must pursue: they can either select a cell containing an egg, which they can first coolly despatch for breakfast, as it appears the larvæ of Sitaris do, and then pass themselves off as wasp-larvæ; or they can look out for one containing a larva, into whose body they can enter, and upon which they can feed till their change comes, as the Ichneumonidæ do upon the bodies of lepidopterous larvæ. Which of these two courses is pursued by them remains to be discovered. Their hours for emerging seem to be restricted to a certain portion of each day; for during the time I was almost exclusively engaged in making observations upon them, a period extending over five days, none made their appearance before about ten o'clock in the morning, nor after about four in the afternoon; while between those hours a considerable number were produced each day.

The specimens, sixty in number, obtained on the first and following day, were placed with all possible care—as soon as they had left the nest, and with a sort of flying leap had alighted on the window—in a gauze bag, in which they were confined for a time. From the bag they were carefully removed, and placed in a bottle containing bruised laurel-leaves, and from the bottle transferred to a tin box, in which they were securely packed and sent to Mr. Douglas. They reached their destination in perfect safety; but, upon examination, nearly one-third of the whole number, and those, with two or three exceptions, females, were found to have a deficiency in the proper number of legs; and although diligent search for the missing articles was made, both in the window, the bag and the bottle, no trace of them could be discovered. If therefore they brought the full complement of legs into the world with them, how is their disappearance to be accounted for?

Neither on their first emerging, nor during the period of their confinement in the bag, did the sexes take the least notice of each other, thus following the example of the inhabitants of the nest among whom they had been brought up. In the case of both these insects it seems absolutely necessary that the air of heaven should fan their love into a flame before it will burn, since, so far as I have been able to observe, copulation never takes place, either among wasps or their parasites, till they have taken their flight from the nest, never more to return to it. In this respect the habits of Ripiphorus contrast strongly with those of Sitaris; the cause of which becomes apparent on comparing the history of the two insects upon which they are parasitic, instinct teaching the latter-named parasites that they may safely deposit their eggs at once, and in the very spot in which they have themselves been reared; for that the bee of the following year will not fail to construct her cells upon the self-same spot,—a spot which has been the birth-place of the species for ages past, and which will in all probability continue to be so for ages to come; while it points out to the former that they cannot deposit theirs, with any possible chance of success, till the following summer, when the insect upon which they are parasitic has not only selected a place in which to build, but has made some progress in the work of building, it being most uncertain in what precise locality the wasp may construct its nest. It may be somewhere not very remote from the spot chosen by its predecessor; but it will be by the merest accident if the nest is found to be placed so near the cavity in which that of the previous year was situated as to be accessible to larvæ produced from eggs deposited in that cavity. Whatever, therefore, the males of this parasite may do, the females must of necessity hybernate.

I have already stated that my observations upon these parasites, at the time they were emerging, extended over a period of five days. During the latter part of that time the combs in which they had been bred were kept suspended under an aquarium-glass, food being placed near the combs that the attendant wasps, which were congregated between them, might be enabled to feed the larvæ the cells still contained,—a task they continued unremittingly to perform, without evincing any great desire to escape from their confinement.

On concluding my observations upon the parasites the combs were returned to their place near the nest from which they had been removed, when numbers of workers belonging thereto were again observed to be employed in the fabrication of a fresh covering, to which daily additions were made for several weeks, the utmost activity prevailing during the time, and the nest becoming more and more populous. Toward the end of September, however, the work became slack, the workers having fallen off very considerably in number. On again removing the covering, which was done early in October, a few eggs and a few spun-up larvæ or nymphæ were the only objects the combs contained. Most of the cells had been cleared out, and their walls well nigh demolished, while no additional ones had been formed since the first removal of the nest, on the 25th of July.

It may be worthy of remark that, from first to last, not a single male appeared to have been produced in this nest; at any rate I never observed one.

S. Stone.

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*On the Transverse Fission of Aiptasia Couchii.**—As I do not find anything in the history of Aiptasia Couchii in your 'Actinologia Britannica' concerning its system of increase, the facts I can communicate may be of interest. About the end of last

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* Extracted from a letter to P. H. Gosse, Esq., F.R.S.

March I was favoured with three specimens of this species. In August I was astonished to find a *fourth*, in a closed condition, too large to have been produced from ova or discharged as perfect young, or to have escaped my observation for any length of time. A few days after this I discovered a second grown specimen, in the process of division; the skin of the lower portion of the column appeared ruptured, revealing a bundle of white threads quite tense. For the moment I felt alarmed for the welfare of my favourite; but the unaccounted-for presence of the fourth specimen led to the conclusion that the process of division was going on. A few hours after, the upper portion, with the disk, which during the whole process was expanded to the utmost, moved off, leaving the old base, with a portion of the column, to form a new animal. For some days the bottom of the column of the old specimen [the separated portion] looked like the broken stem of a plant with numerous ragged ends of white fibres hanging about; it however healed in time, returning to its former state. Immediately after the division the new animal, *i.e.* the [moiety which possessed the] old base, closed over perfectly the ruptured integument, and showed little signs of life for ten or twelve days; gradually, however, it formed a new disk and minute tentacles. Three weeks after, it had a well-formed disk and long tentacles. Within a few days of the same period the *third* specimen also went through the same process, but the ruptured integument of the old base [*i. e.* the new animal] never healed; it lived many days in a restless state, and then died. The three old specimens* recovered, and, together with the two young, which have grown, and show all the characteristics of the old ones, are in good condition at the present time. I was at the Zoological Society last autumn, and was there shown two small Aiptasiæ which the keeper informed me had been produced from ova. The transverse division of the whole column was so new a fact to me that I intended putting you in possession of the facts long ago, in case you might have thought them worthy of note in your valuable work now completed; probably, however, ere this you have been made acquainted with similar facts, or they may have occurred under your immediate notice.—*F. N. Broderick; Ryde, Isle of Wight, January* 2, 1860.

The Stoat (Mustela erminea) *in its Winter Garb at Selborne.*—A kind neighbour of mine brought me, on the 27th of last month, a stoat which he had shot on Selborne Common, which had assumed almost completely the northern winter garb of the ermine, the only remains of the ordinary brown being partially on the head and on some portions of the anterior part of the body; the whole of the hinder part, including the tail, being as perfect ermine as any lady could desire for her muff or a peer for his Parliamentary robe. This is a rare, but not an unprecedented, occurrence in this latitude, as I find in my notes the following passage:—"An intelligent labourer here has assured me that he has repeatedly killed the stoat in its pure white winter dress at Selborne. He has also found it in the pied transition state."—*Thomas Bell; January* 7, 1860.

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* It must be borne in mind that my correspondent applies the term "old" to those animals which retain the original *disk*, and "young" to those which have formed a new disk.—*P. H. G.*

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[CONTINUED FROM SECOND PAGE].

From the Rev. J. Pemberton Bartlett, M.A.

Having been a subscriber to the 'Zoologist' from the first, and one of its original contributors (albeit in a very humble way), I take the liberty of advising you neither to begin a new paging nor a new series, and, above all, not to alter its name. "The rose with any other name *might* smell as sweet," but I cannot help fancying that the 'Zoologist' will be more acceptable to the majority of those who subscribe to it with its present name, than with any other that might be devised for it. I do not see exactly, either, how the paging *now* can be more cumbrous than it was when you arrived at the 1000th page; *then* there might have been a question, perhaps, whether an alteration would have been advisable; but having gone on so long with four figures, why not continue them until you will require five? and then it might be advisable to begin a new mode of paging.—*Enbury Parsonage, near Southampton.*

From George Maw, Esq.

If you retain the 'Zoologist' in its present form and character, I do not see the use in commencing a fresh series of numbers for pages: it is sure to cause confusion. I remember at the Manchester Exhibition the great difficulty there was in identifying the objects with the entries in the catalogue, on account of their being over classified, involving five or six sets of numbers; and if you have two sets of numbers your readers will experience, in measure, the same difficulty.

I have often thought of asking you to devote a "little corner"—say a page, or, as occasion requires, two pages each month—for the record of facts connected with Botany, just the "pith" of the news. I am quite sure that the 'Zoologist' would be rendered more extensively interesting by the addition of a few botanical notes. You might then call it the 'Naturalist' or 'Natural Historian'; and the long standing of the 'Zoologist' would guarantee its permanency as a record of current facts.—*Broseley.*

Having invited these communications, I have felt myself bound in courtesy to insert them *verbatim et literatim*. It must, however, be understood that I take exception to the Rev. Mr. Greene's proposition, as conveyed in the second paragraph of his communication. I am scarcely conceited enough to suppose that the motion will find a seconder; but, in the remote possibility of such a case, I beg to say that the 'Zoologist' is not at his service for such a purpose.—**Edward Newman.**

On Undetermined Questions in Zoology.—There are certain questions in Natural History which the authority of our learned pundits has so decisively settled, that it requires no small bravery in any inquirer even to admit that he doubts. And yet some who think for themselves are not quite satisfied. I am one of those who desire further evidence on some of the tabooed points in Science; and my sympathy with the 'Zoologist' is much augmented by the fact that its pages have always been open for the discussion of questions which the pundits would dispose of by a "pooh, pooh!" Among these are the following:—

The Sea-Serpent.
Incarceration of Toads.
Showers of Frogs, Fishes, &c.
Torpidity of Swallows.
Fascination in Serpents.
Curative Power of Snakestones.
Mermaid, or similar form; &c., &c.

May I ask of any of your correspondents, not merely new facts, but information *how and where to get together what is on record* on any of these points. There are, no doubt, some of your readers who have made notes, in years past, of such records; if they would kindly communicate the information either to the 'Zoologist,' or to myself privately, I should be greatly obliged.—*P. H. Gosse; Torquay, January 3, 1860.*

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Bird Skins.

MR. J. C. STEVENS will sell by Auction, at his Great Room 38, King Street, Covent Garden, on TUESDAY, March 27, at Half-past Twelv precisely, a portion of the BIRD SKINS collected by the Rev. H. B. TRISTRA including TYPE SPECIMENS of several of the NEW SPECIES from North Afric recently described by him; together with a small Collection of RARE BRITISH BIR FROM THE NORTH OF EUROPE, comprising fine examples of the Iceland Falcon an Steller's Western Duck; also an importation of beautiful SPECIMENS FROM TRINIDA &c., &c.

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